REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are requested.

By this amendment, claims 18-23 have been canceled and claims 24-29 have been added. Thus, claims 24-29 remain pending. Support for the new claim recitations can be found at least at: Fig. 41; and column 26, lines 22-28. If the Examiner requires further supporting passages, she is invited to contact the undersigned by telephone.

Claims 18-23 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 5,600,672 in view of Glenn. It is submitted that this rejection is improper. The present application is a reissue application of U.S. Patent No. 5,600,672. Further, the original patent was surrendered to the PTO on July 18, 2001 in the parent application of the present application. The Serial No. of the parent application is 09/244,037. Moreover, as is the case in the present application, in the parent application claim 1 of the original patent 5,600,672 has been canceled, and original claim 1 is not present in any of the currently pending reissue applications of U.S. Patent No. 5,600,672.

Claims 18-23 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 13-18, and 24-29 of copending applications nos. 09/668,068 and 09/680,176. This rejection is traversed and is inapplicable to new claims 24-29 for the following reasons.

Claims 24-29 recite apparatuses or methods and each include recitations related to first and second data streams assigned to a respective constellation in a vector space diagram, wherein the number of signal points of the constellation for the first data stream is different from the number of signal points of the constellation for the second data stream, the first data stream has a synchronization data and data for demodulation for demodulating the modulated signals corresponding to the second data stream, the synchronization data is located at the beginning of the first data stream, and the data for demodulation follows the synchronization data.
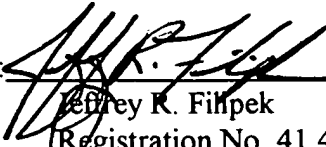
The applied copending applications do not claim the apparatuses or methods as recited in detail in claims 24-29 of the present application, including the existence and arrangement of

synchronization data and data for demodulation in the data streams. Therefore, it is submitted that claims 24-29 are allowable over the applied copending applications.

In view of the above amendments and remarks, it is submitted that the present application is in condition for allowance. The Examiner is invited to contact the undersigned attorney by telephone to resolve any remaining issues.

Respectfully submitted,

Mitsuaki OSHIMA et al.

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April 24, 2003
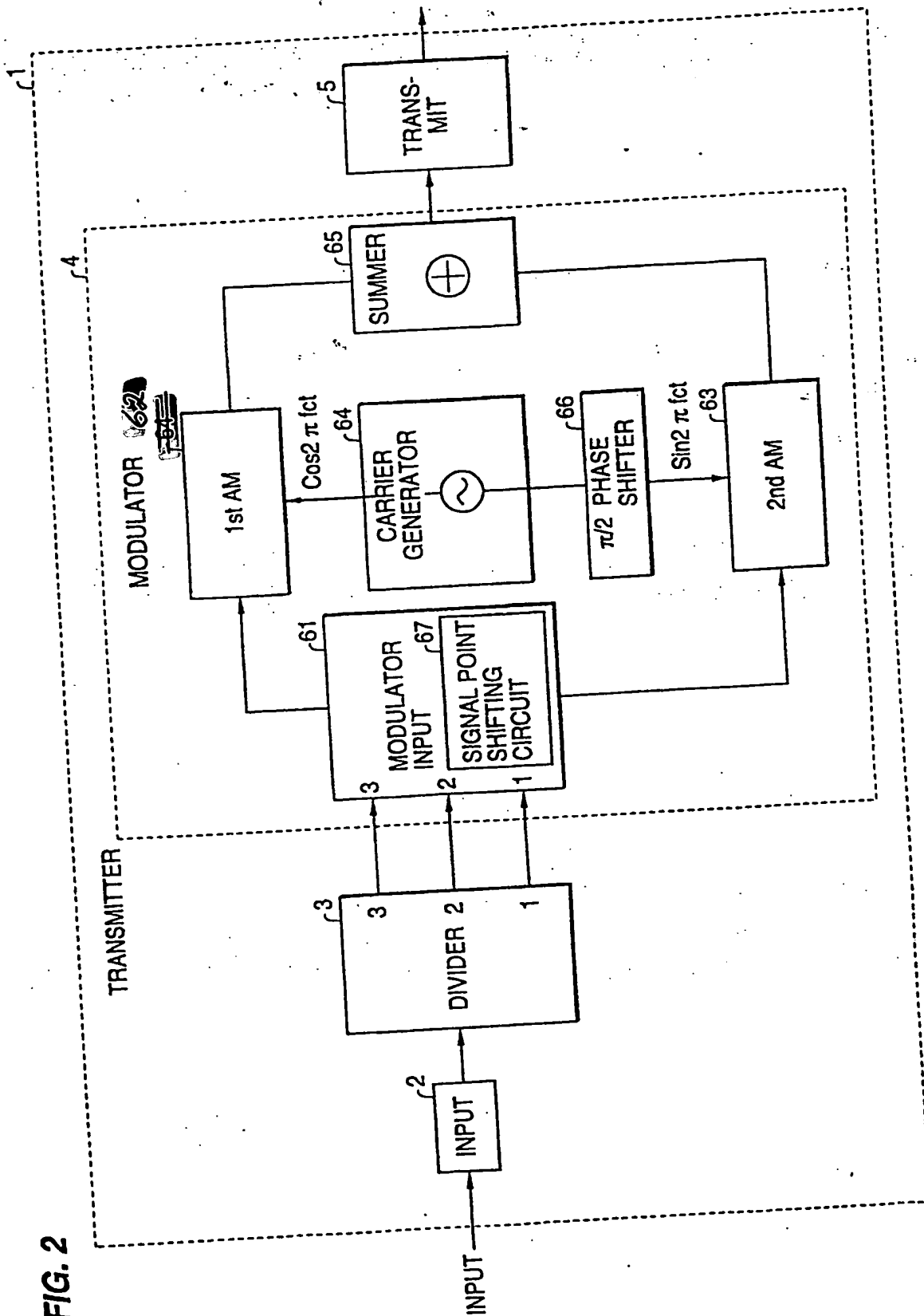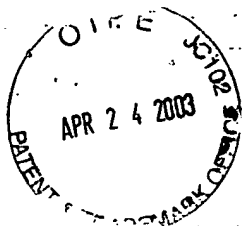
FIG. 2

INPUT

TRANSMITTER

INPUT — 2

DIVIDER — 2

3 — 3

MODULATOR — 62

MODULATOR INPUT — 61

SIGNAL POINT SHIFTING CIRCUIT — 67

1st AM — 64

Cos2 π fct

CARRIER GENERATOR — 64

π/2 PHASE SHIFTER — 66

Sin2 π fct

2nd AM — 63

SUMMER — 65

TRANS-MIT — 5

FIG. 10

FIG. 17

DIGITAL TRANSMITTER

MODULATOR

INPUT 52

MODULATOR INPUT 121

1st TWO-PHASE SHIFTER MOD CIRCUIT 122

CARRIER GENERATOR 64

Cos2 π fct

π/2 PHASE SHIFTER 66

-Sin2 π fct

2nd TWO-PHASE SHIFTER MOD CIRCUIT 123

SUMMER 65

TRANS-MIT 55

54

57

FIG. 29

FIG. 48

FIG. 65

FIG. 67
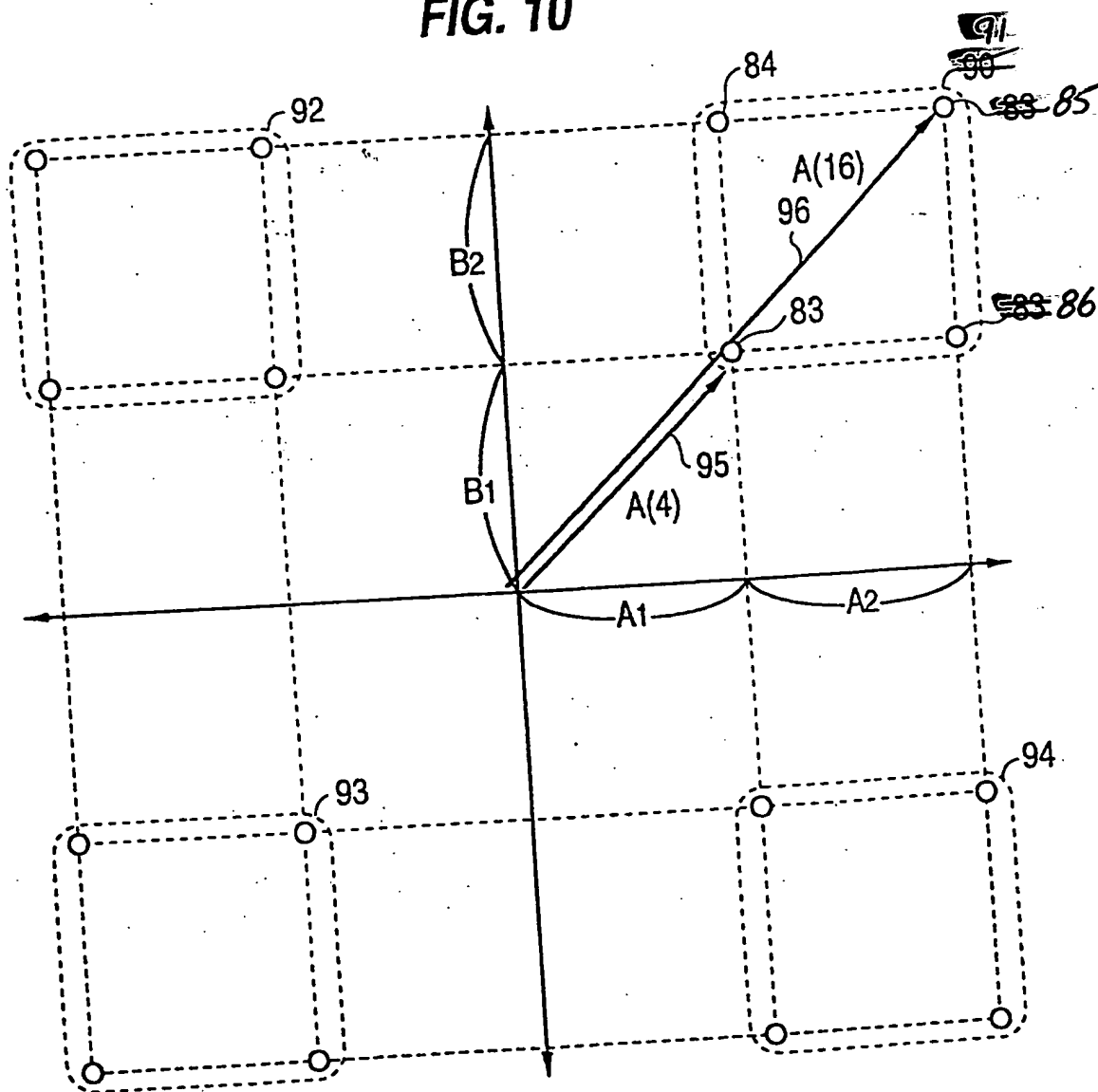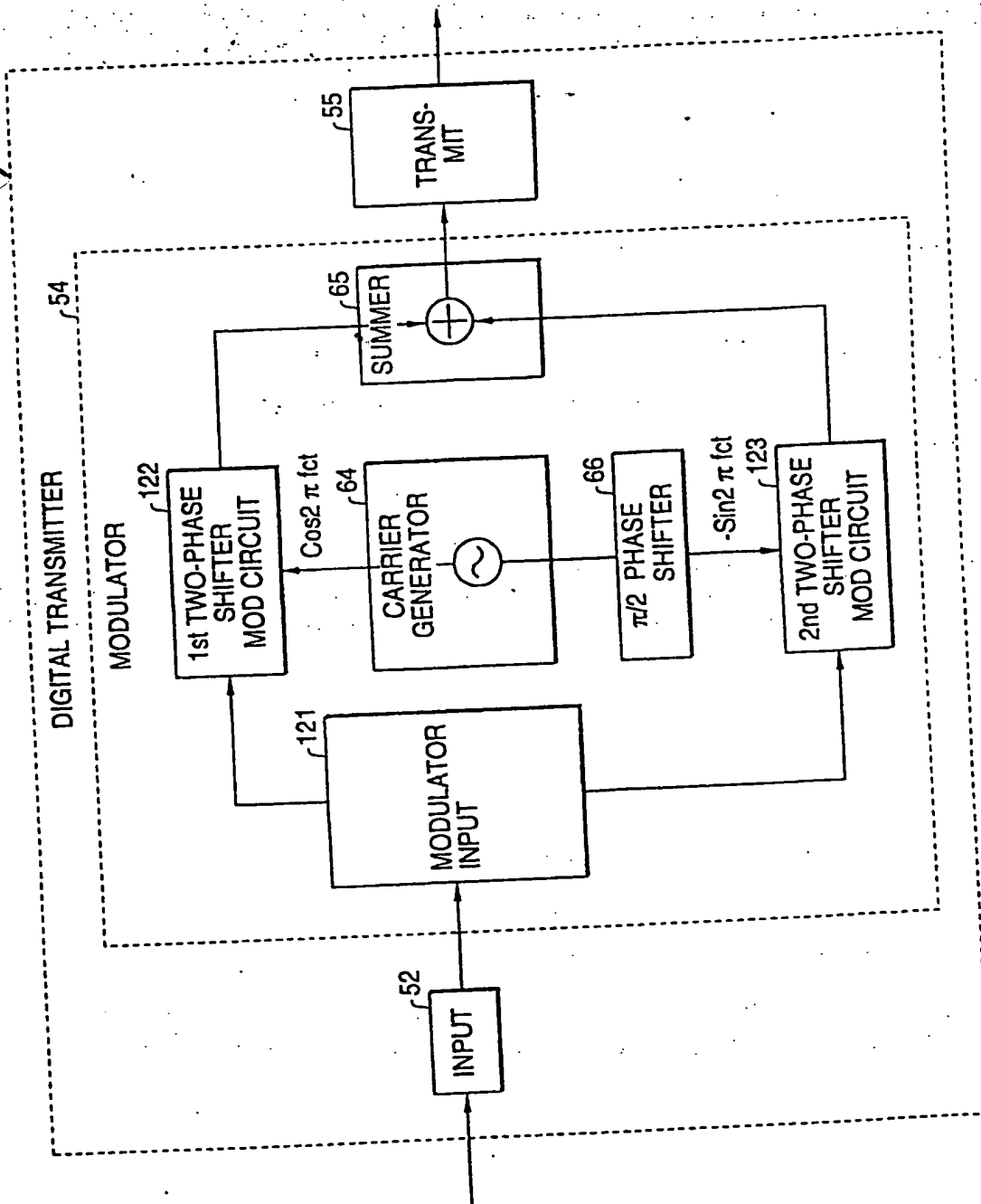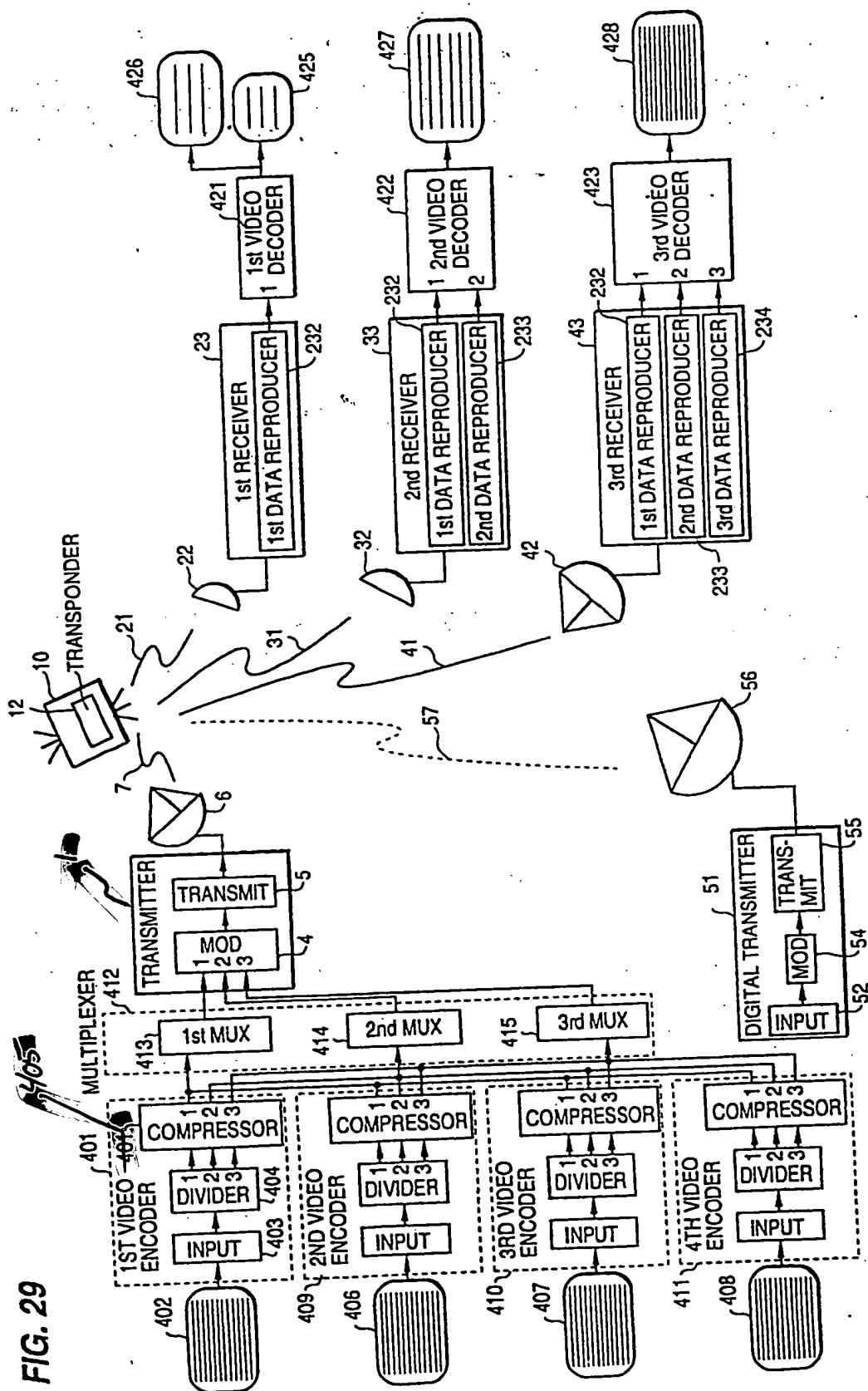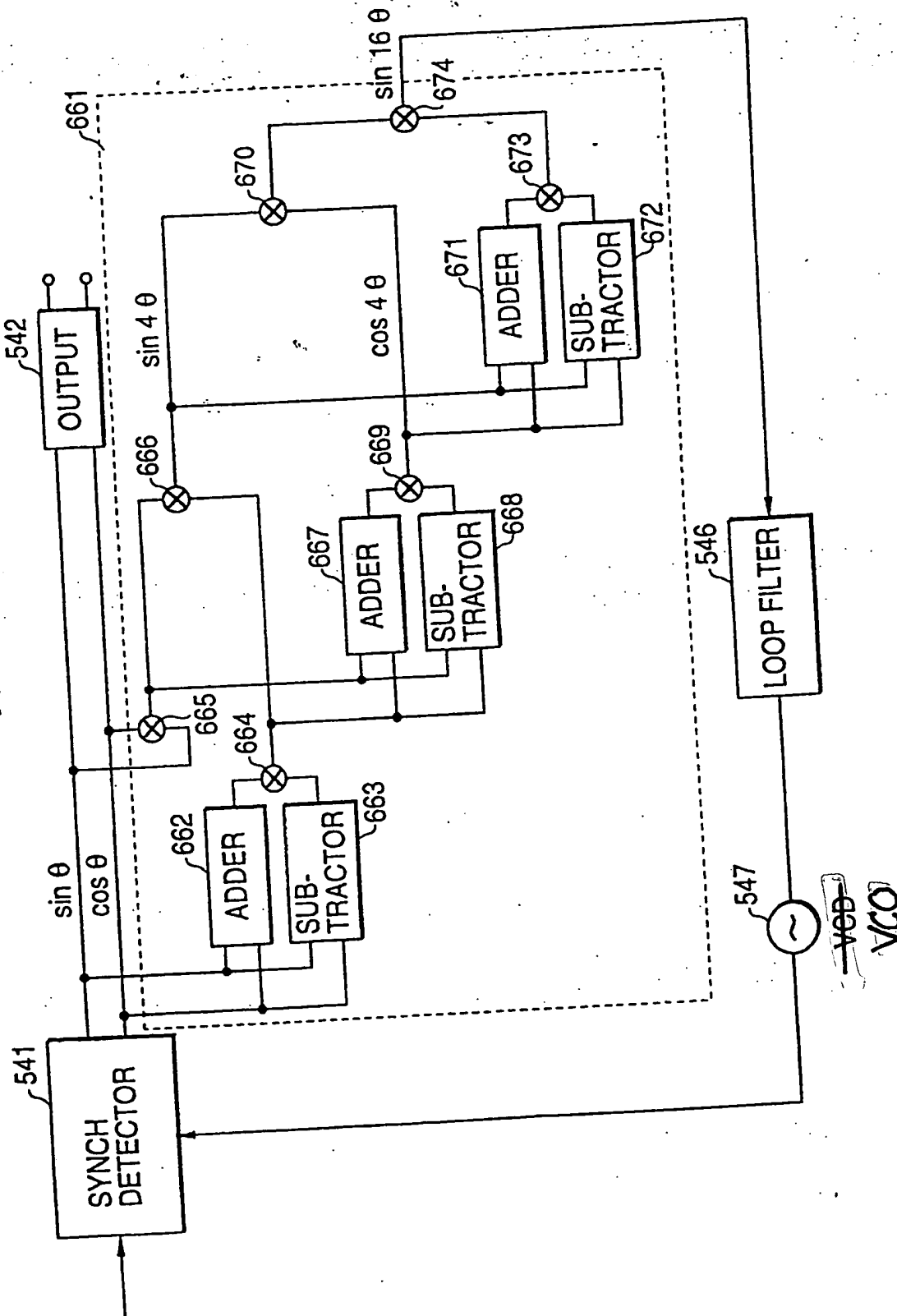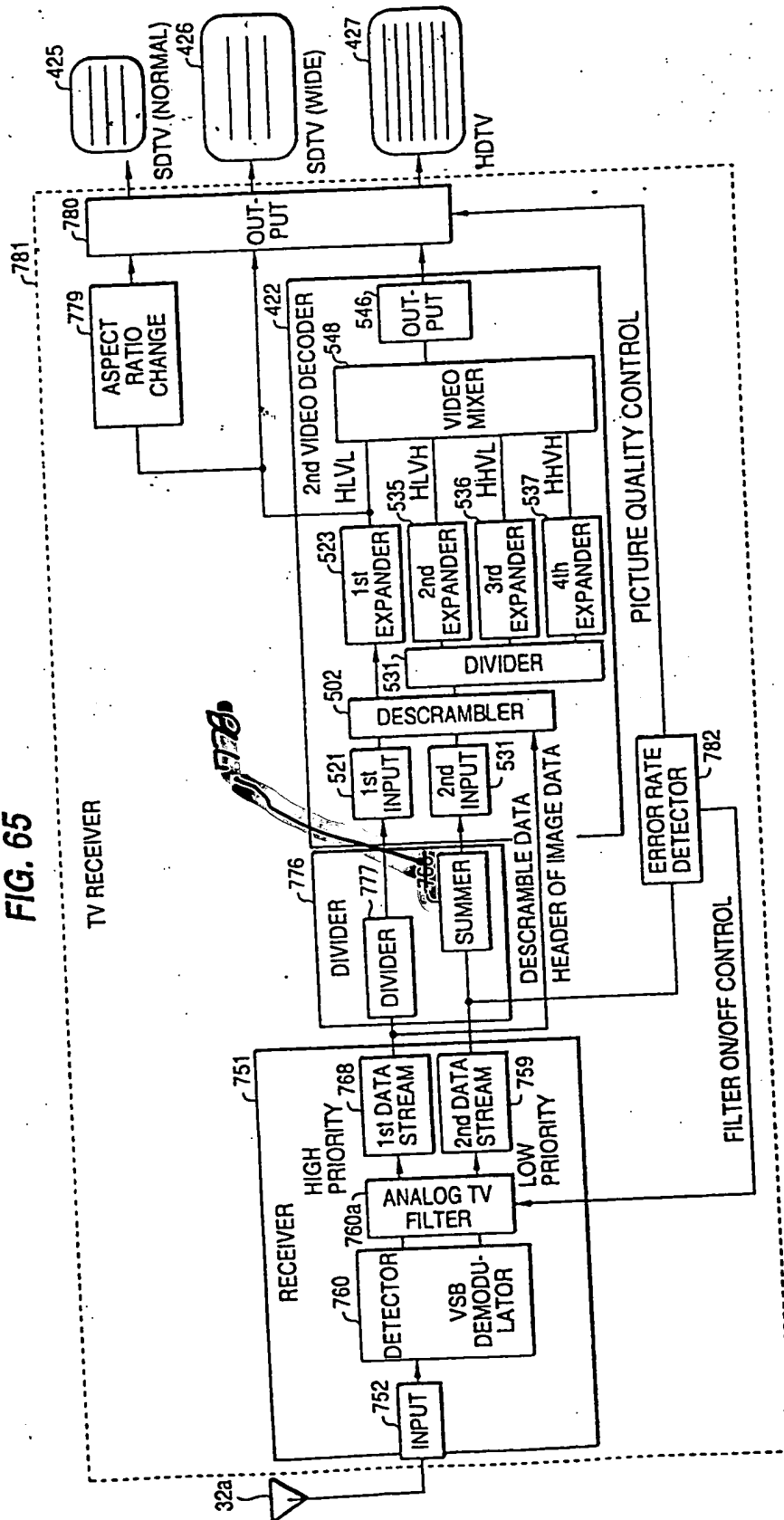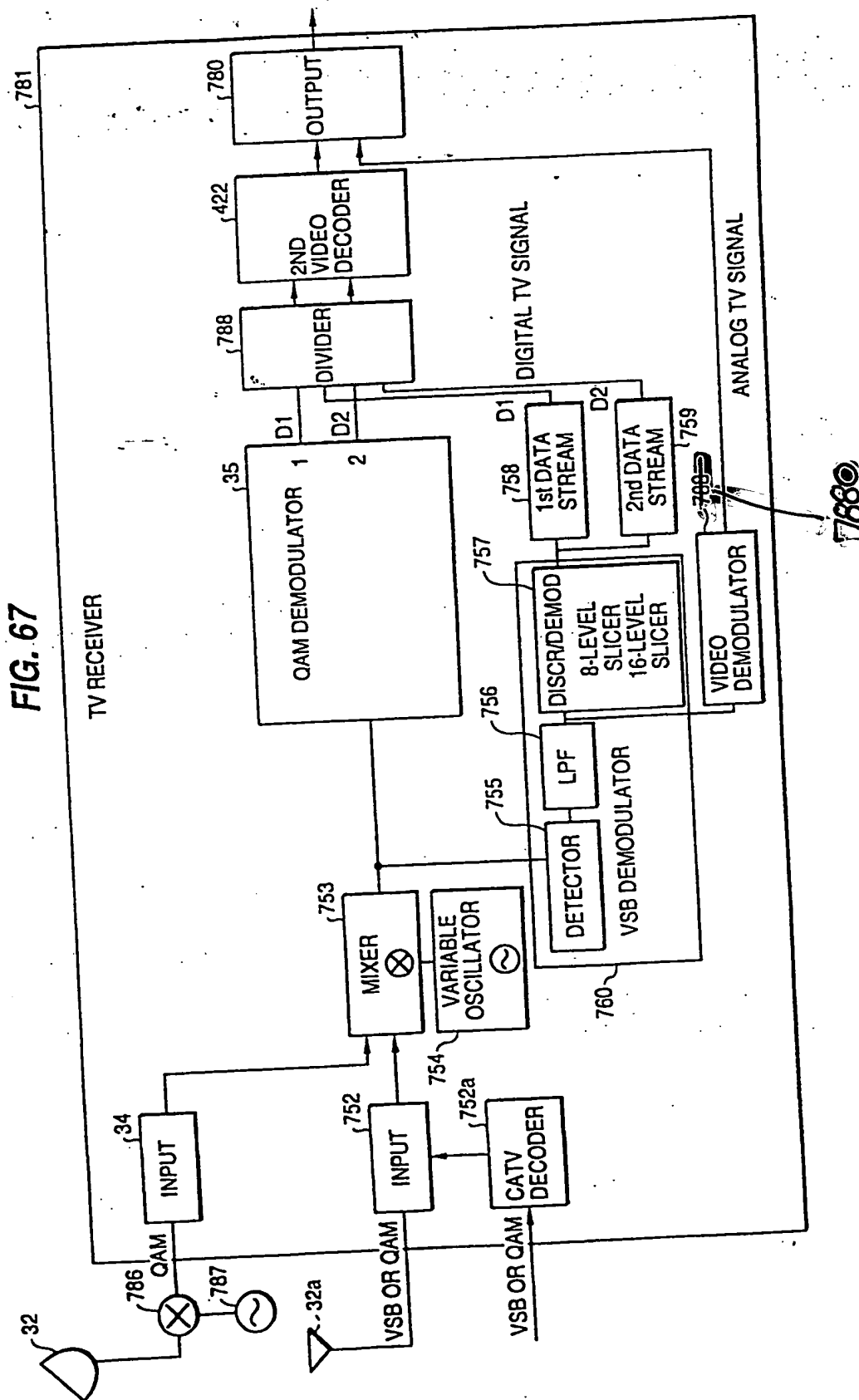
FIG. 93
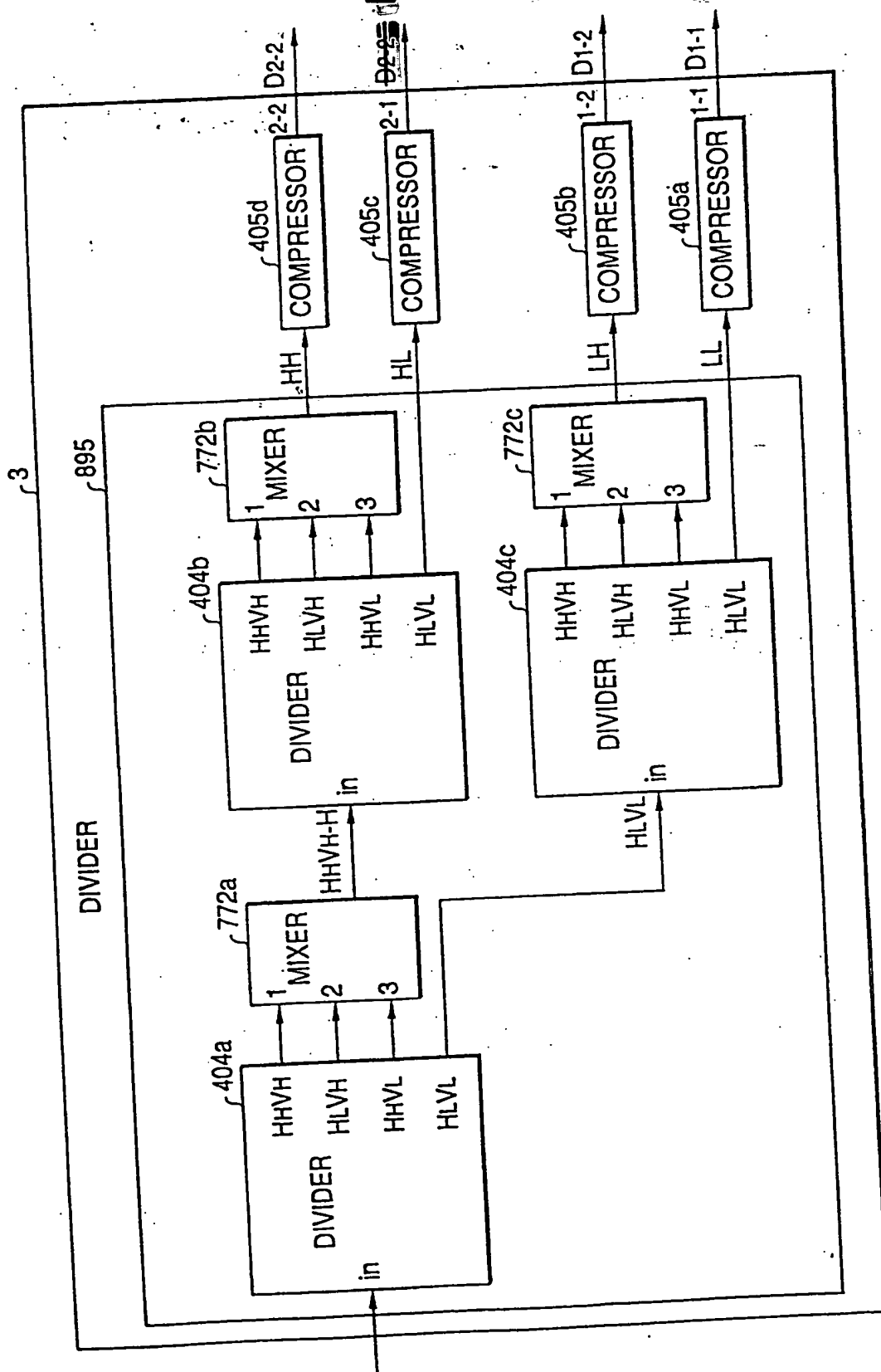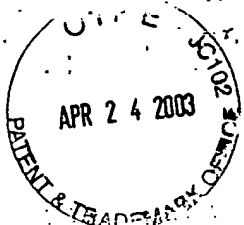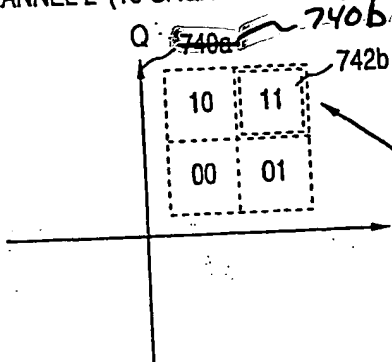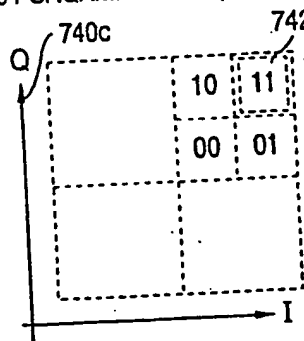
FIG. 112

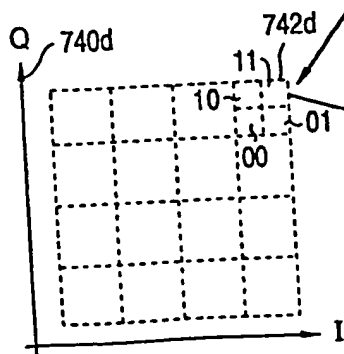SUBCHANNEL-1 (SRQAM:D1 = 2bit)
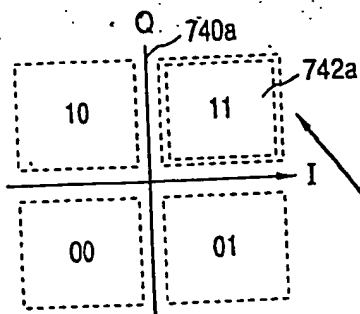
SUBCHANNEL-2 (16-SRQAM:D2 = 2bit)

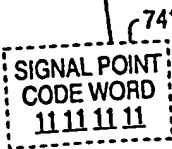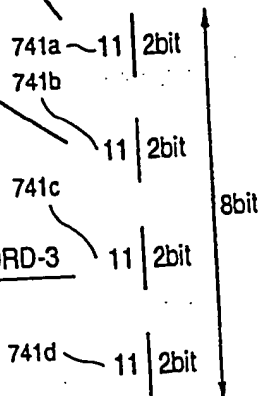SUBCHANNEL-3 (64-SRQAM:D3 = 2bit)

SUBCHANNEL-4 (256-SRQAM:D4 = 2bit)

CODE WORD-1

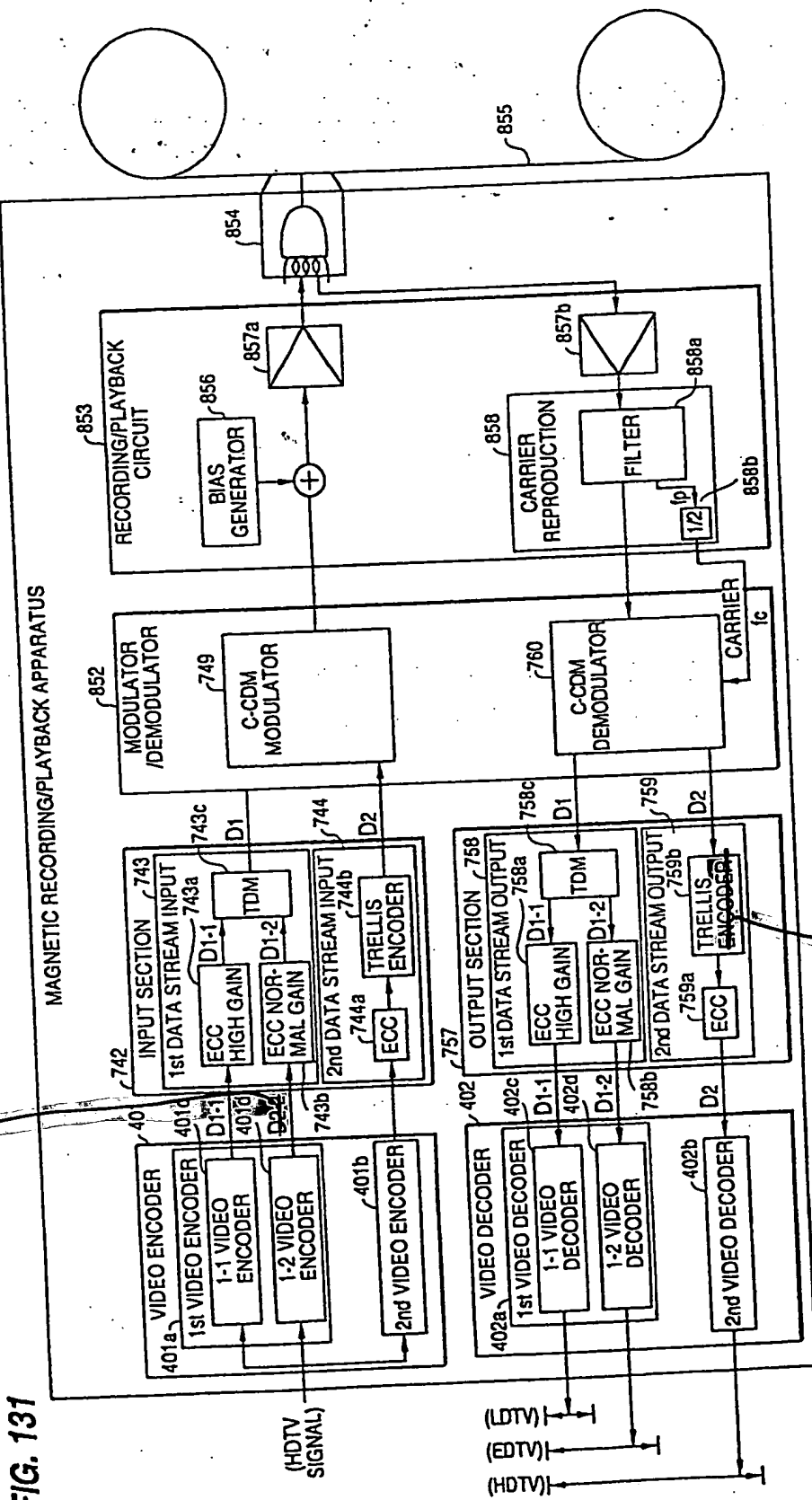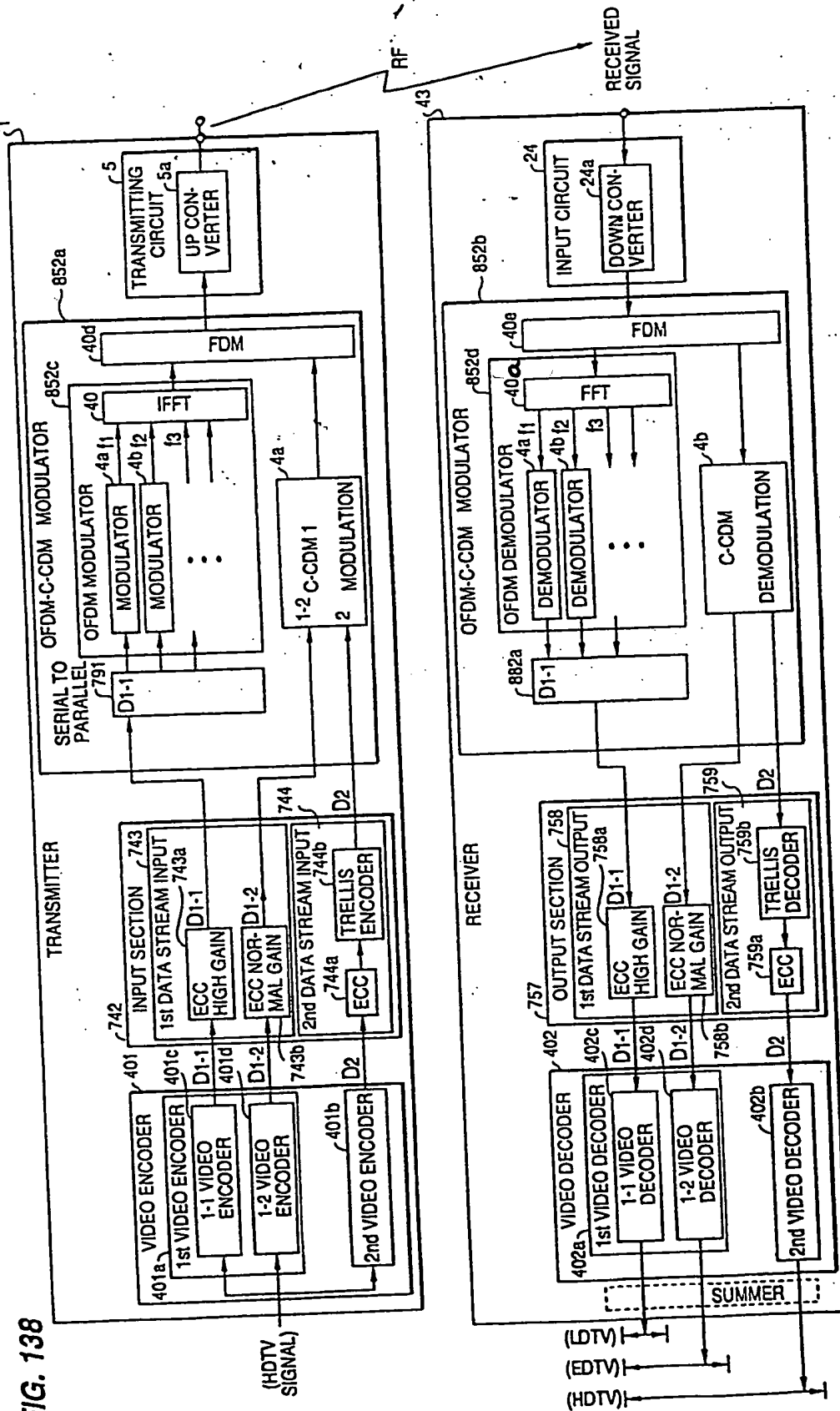CODE WORD-2

CODE WORD-3

CODE WORD-4

741a ~ 11 | 2bit

741b

11 | 2bit

741c

11 | 2bit

741d ~ 11 | 2bit

8bit

SIGNAL POINT
CODE WORD
11 11 11 11

741

FIG. 131

FIG. 138

FIG. 144

FIG. 169

COMPARISON OF REDUNDANCY

DATA RATE REQUIREMENT FOR COMPRESSED DIGITAL HDTV BROADCASTING

REDUNDANCY: R16=100%

R16

REDUNDANCY: R8 =50%

REDUNDANCY: R4 = 10%
R4 = 10%

16 - VSB

8 - VSB

4 - VSB

TRANSFER RATE [Mbps]

40

30

20

10

0